AMENDMENT OF CLAIMS UNDER PCT ARTICLE 19(1)

With respect to International Application No. PCT/JP2004/010618, filed on July 26, 2004, the applicant canceled sheets 27-30 of the Description entirely and submitted substitute sheets 27-31 which are attached hereto. Claims 1 and 2 are unchanged, claims 3 and 4 are amended, claim 5 is unchanged, the clerical error of claim 6 is corrected, claim 7 is unchanged, claim 8 is canceled, and new claims 9 and 10 are added.

CLAIMS

1. An image processing method which corrects a 3-dimensional CT data value obtained from a 3-dimensional object, comprising:

a threshold setting step of setting a threshold value used for generating a correction value from the 3-dimensional CT data value obtained from the 3-dimensional object;

an average calculating step of calculating an average value of a 3-dimensional CT data block comprising a 3-dimensional CT data element of a correction target and a plurality of 3-dimensional CT data elements in a neighborhood of the 3-dimensional CT data element of the correction target; and

a correction step of correcting the 3-dimensional CT data value by using the threshold value set in the threshold setting step and the average value obtained in the average calculating step.

2. An image processing method according to claim 1 wherein the 3-dimensional CT data value $Voxel_{out}$ after correction is calculated in accordance with the formulas:

$$Voxel_{out} = Voxel(x,y,z) - Thr_{vol}(Thr_{vol} > A_{vn}) \quad (1)$$

$$Voxel_{out} = Voxel(x,y,z) - A_{vn} \ (Thr_{vol} < A_{vn}) \quad (2)$$

where $Voxel_{in}$ denotes the 3-dimensional CT data value before correction, Thr_{vol} denotes the threshold value, and A_{vn} denotes the average value of the 3-dimensional CT data block.

3.(Amended) An image processing method according to claim 1 wherein $Voxel_{in}$ denotes the 3-

dimensional CT data value before correction, Thr_{vol} denotes the threshold value, and A_{Vn} denotes the average value of the 3-dimensional CT data block, and wherein the threshold value Thr_{vol} is set up from an average value A of the whole CT data in accordance with the formula:

$$Thr_{vol} = k1 \times A \quad .... (10)$$

where k1 denotes a given value and $0 < k1 =< 1$, and the value of k1 is either predetermined based on a past data or set up on respective occasions of image processing,

wherein a difference C between an average value A_{VN} of neighboring pixels and the average value A is calculated in accordance with the formula:

$$A_{VN} - A = C \quad (11),$$

wherein the 3-dimensional CT data value $Voxel_{out}$ after correction is calculated in accordance with the formula:

$$Voxel_{out} = Voxel_{in} - C \quad (12).$$

4.(Amended) An image processing method according to claim 1 wherein $Voxel_{in}$ denotes the 3-dimensional CT data value before correction, Thr_{vol} denotes the threshold value, and A_{Vn} denotes the average value of the 3-dimensional CT data block,

wherein the threshold value Thr_{vol} is set up from an average value A of the whole CT data in accordance with the formula:

$$Thr_{vol} = k1 \times A \quad .... (10)$$

where k1 denotes a given value and $0 < k1 =< 1$, and the value of k1 is either predetermined based on a past data or set up on respective occasions of image processing,

wherein a difference C between an average value A_{VN} of neighboring pixels and the average value A is calculated in accordance with the formula:

$$A_{VN} - A = C \quad (11),$$

wherein the 3-dimensional CT data value $Voxel_{out}$ after correction is calculated in accordance with the formulas:

$$Voxel_{out} = Voxel_{in} - C \quad (14)$$

in a case of $A > A_{VN}$, and

$$Voxel_{out} = Voxel_{in} \quad (15)$$

in a case of $A < A_{VN}$.

5. An image processing method which processes 3-dimensional CT data obtained from a 3-dimensional object, comprising:

an integrated value calculating step of calculating an integrated value of a predetermined number of 3-dimensional CT data elements which are consecutive with a currently observed 3-dimensional CT data element being set as a starting point, for each of a plurality of directions with the currently observed 3-dimensional CT data element being set as a starting point;

a sum calculating step of calculating a sum of a predetermined number of upper-rank integrated values among respective integrated values calculated for the plurality of directions in the integrated value calculating step; and

a judgment step of comparing the sum obtained in the sum calculating step with a predetermined threshold value, and determining the currently observed 3-dimensional CT data element as being data of a

processing target when the sum is larger than the threshold value.

6. (Amended) An image processing method according to claim 5 further comprising a threshold setting step of setting the threshold value based on an average value of the integrated values calculated for all the plurality of directions in the integrated value calculating step and a maximum value of the integrated values calculated for all the plurality of directions in the integrated value calculating step.

7. An image processing method which processes 3-dimensional CT data obtained from a 3-dimensional object, comprising:

an integrated value calculating step of calculating an integrated value of a predetermined number of 3-dimensional CT data elements which are consecutive with a currently observed 3-dimensional CT data element being set as a starting point, for each of a plurality of directions with the currently observed 3-dimensional CT data element being set as a starting point;

a sum calculating step of calculating both a sum of a predetermined number of upper-rank integrated values among respective integrated values calculated for the plurality of directions in the integrated value calculating step and a sum of a predetermined number of lower-rank integrated values among the respective integrated values calculated for the plurality of directions in the integrated value calculating step;

a correction step of correcting a currently observed 3-dimensional CT data element based on the sum

of the predetermined number of upper-rank integrated values and the sum of the predetermined number of lower-rank integrated values; and

a judgment step of comparing the corrected 3-dimensional CT data element obtained in the correction step with a predetermined threshold value, and determining the currently observed 3-dimensional CT data element as being data of a processing target when the corrected 3-dimensional CT data element is larger than the threshold value.

8. (Canceled)

9. (New) An image processing method according to claim 2 wherein the threshold value Thr_{vol} is set up from an average pixel value A in accordance with the formula:

$$Thr_{vol} = k1 \times A \quad .... (10)$$

where k1 denotes a given value and $0 < k1 =< 1$, and the value of k1 is either predetermined based on a past data or set up on respective occasions of image processing.

10. (New) A computer-readable recording medium in which an image processing program embodied therein for causing a computer to execute the image processing method according to any of claims 1-7 and 9 is recorded.